

Form PTO-1390
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US DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

ATTORNEY'S DOCKET NO.

H 3947 PCT/US**TRANSMITTAL LETTER TO THE UNITED STATES
DESIGNATED/ELECTED OFFICE (DO/EO/US)
CONCERNING A FILING UNDER 35 U.S.C. 371**

U.S. APPLICATION NO. (if known see 37 CFR 1.5)

10/018990INTERNATIONAL APPLICATION NO.
PCT/EP00/05536INTERNATIONAL FILING DATE
June 16, 2000PRIORITY DATE CLAIMED
June 24, 1999

TITLE OF INVENTION

METHOD AND FLAT STRUCTURE FOR DETACHABLY FIXING AN OBJECT TO A SURFACE

APPLICANT(S) FOR DO/EO/US

Tilwin LEPSIUS, Wolfgang KLAUCK and Gaby SCHILLING

Applicant herewith submits to the United States Designated/Elected Office (EO/DO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
 2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
 3. ☐ This express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39 (1).
 4. ☒ A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.
 5. ☒ A copy of the International Application as filed (35 U.S.C. 371(c)(2)).
 - a. ☐ is transmitted herewith (required only if not transmitted by the International Bureau).
 - b. ☒ has been transmitted by the International Bureau.
 - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
 6. ☒ A translation of the International Application into English (35 U.S.C. 371(c)(2)).
 7. ☒ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))
 - a. ☐ are transmitted herewith (required only if not transmitted by the International Bureau).
 - b. ☐ have been transmitted by the International Bureau.
 - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
 - d. ☒ have not been made and will not be made.
 8. ☐ A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
 9. ☒ An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).
 10. ☐ A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).
- Items 11. to 16. below concern other document(s) or information included:**
11. ☒ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
 12. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
 13. ☒ A **FIRST** preliminary amendment
 ☐ A **SECOND** or **SUBSEQUENT** preliminary amendment.
 14. ☐ A substitute specification.
 15. ☐ A change of power of attorney and/or address letter.
 16. ☒ Other items or information:

International Search Report (With Information Disclosure Citation and References)
 Drawings - 3 sheets

"Express Mail" mailing label number EL 615775009 US

U.S. Application No. (If known, see 37 CFR 1.15) 10/018990		INTERNATIONAL APPLICATION NO. PCT/EP00/05536		ATTORNEY'S DOCKET NUMBER H 3947 PCT/US	
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17. The following fees are submitted:
BASIC NATIONAL FEE (37 CFR 1.492(a)(1)-(5)):
 Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO.....**\$1,000.00**

International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO.....**\$890.00**

International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO**\$710.00**

International preliminary examination fee paid to USPTO (37 CFR 1.482) but all claims did not satisfy provisions of PCT Article 33(1)-(4) **\$690.00**

International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(1)-(4) **\$100.00**

CALCULATIONS PTO USE ONLY

ENTER APPROPRIATE BASIC FEE AMOUNT				=	\$	890
Surcharge of \$130.00 for furnishing the oath or declaration later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date 37 (CFR 1.492(e)).				=	\$	0

CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE		
Total Claims	1 - 20 =	0	0 X \$18.00	\$	0
Independent Claims	1 - 3 =	0	0 X \$80.00	\$	0
Multiple dependent claims (s) (if applicable)			0	+ \$270.00	\$ 0
TOTAL OF ABOVE CALCULATIONS				=	\$ 890
Reduction of 1/2 for filing by small entity, if applicable. A Small Entity Statement must also be filed. (Note 37 CFR 1.9, 1.27, 1.28).				=	\$ 0
SUBTOTAL				=	\$ 890
Processing fee of \$130.00 for furnishing the English translation later the <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(f)).				+	\$ 0
TOTAL NATIONAL FEE				=	\$ 890
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40.00 per property				=	\$ 0
TOTAL FEES ENCLOSED				=	\$ 890

	Amount to be refunded:	\$ _____
	charged:	\$ 890.00

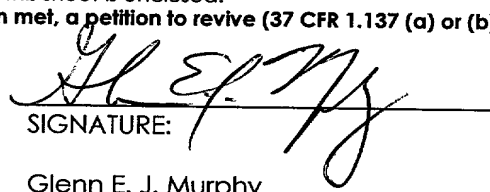
a. ☐ A check in the amount of \$ _____ to cover the above fees is enclosed.

b. ☒ Please charge my Deposit Account No. 01-1250 in the amount of \$ 890.00 to cover the above fees. A triplicate copy of this sheet is enclosed. Order No. 01-0868.

c. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 01-1250. A duplicate copy of this sheet is enclosed.

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137 (a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO: Henkel Corporation, Law Dept.
 2500 Renaissance Blvd., Suite 200
 Gulph Mills, PA 19406


 SIGNATURE:
Glenn E. J. Murphy
 NAME ATTORNEY FOR APPLICANT
33,539
 REGISTRATION NUMBER

#5



PATENT
Docket H 3947 PCT/US

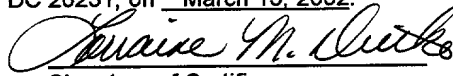
IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : LEPSIUS, et al.
Appl. No. : 10/018,990
Filed :
Title : METHOD AND FLAT STRUCTURE FOR DETACHABLY FIXING
AN OBJECT TO A SURFACE

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the
US Postal Service as first class mail in an envelope addressed to: Assistant
Commissioner for Patents, Washington, DC 20231, on March 13, 2002.

March 13, 2002
Date


Signature of Certifier
Lorraine M. Dutko
Typed or printed name of certifier

SECOND PRELIMINARY AMENDMENT

Assistant Commissioner of Patents
Washington, DC 20231

Please enter the amendments below before examining this
case on the merits:

IN THE CLAIMS:

Please cancel claim 1 without prejudice, and add new
claims 10-21:

10. A method for detachably fixing an object to a surface,
comprising the steps of fixing the object to the surface by
means of a first and a second flat material, said flat
materials each being coated on one side with a pressure-
sensitive adhesive and being provided on the other side with
connecting elements, said connecting elements on each flat
material being formed to interlock with the connecting
elements of the other flat material, joining the first and

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second flat materials together to form one flat material that is coated on one side with the pressure-sensitive adhesive and that on its other side comprises the connecting elements, folding the one flat material formed by the two flat materials such that the connecting elements of the respective flat materials lie on top of one another to interlock the sides of the two flat materials, adhering the object to part of the side of the one flat material coated with the pressure-sensitive adhesive, and adhering another part of the side of the one flat material coated with the pressure-sensitive adhesive to the surface.

11. The method of claim 10, wherein the connecting elements comprise hooks and loops of a velcro fastener.

12. The method of claim 10, wherein the connecting elements comprise mushroom-shaped pins and loops.

13. The method of claim 10, wherein the connecting elements are of the same shape.

14. The method of claim 13, wherein the connecting elements comprise mushroom-shaped pins.

15. The method of claim 10, wherein the side of the one flat material comprising the connecting elements is transversely divided into two parts, a first part comprising connecting elements of one type and the second part comprising connecting elements of another type that correspond and interlock with the connecting elements of the first part.

16. The method of claim 15, wherein the two parts of the transversely divided flat material are equal halves.

17. An adhesive tape for detachably fixing an object to a surface, comprising a first and a second flat material, said flat materials each being coated on one side with a pressure-sensitive adhesive and being provided on the other side with connecting elements, said connecting elements on each flat material being formed to interlock with the connecting elements of the other flat material, said first and second flat materials being joined together to form one flat material that is coated on one side with the pressure-sensitive adhesive and that on its other side comprises the connecting elements.

18. The adhesive tape of claim 17, wherein the connecting elements comprise hooks and loops of a velcro fastener.

19. The adhesive tape of claim 17, wherein the connecting elements comprise mushroom-shaped pins and loops.

20. The adhesive tape of claim 17, wherein the side of the one flat material comprising the connecting elements is transversely divided into two parts, a first part comprising connecting elements of one type and the second part comprising connecting elements of another type that correspond and interlock with the connecting elements of the first part.

21. The method of claim 20, wherein the two parts of the transversely divided flat material are equal halves.

IN THE ABSTRACT:

Please delete the abstract entered with the preliminary amendment filed December 21, 2001, and add the attached new abstract to the application as a separate page following the claims.

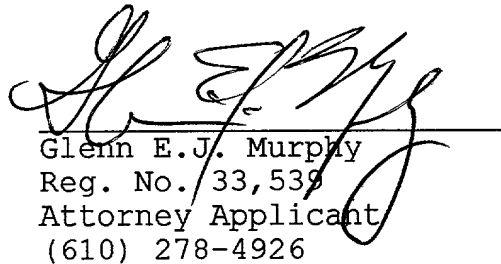
REMARKS

Claim 1 has been canceled and new claims 10-21 added. The new claims find support in the specification at page 3, line 30, to page 4, line 11, page 6, lines 7-17, and page 6, line 25 to page 7, line 3, as well as in the claims as originally filed. No new matter has been added to the application.

The new claims better claim the full literal and equivalent scope and breadth of the subject matter disclosed in the application, notwithstanding applicants' belief that the original claims, drafted for examination in the German patent office, would have been allowable but for minor matters of form, such as multiple dependency, multiple preferred embodiments within a single claim, and other forms of language permissible in German practice but objected to in the USPTO. The new claims find support in the application independent of the original claims and therefore are not seen to constitute narrowing amendments to the original claims within the holding of Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., No. 95-1066 (Fed. Cir. Nov. 29, 2000).

Applicants respectfully request entry of this Amendment and examination of the application. If any fees are due to enter this paper that have not been accounted for, please charge Deposit Account No. 01-1250.

Respectfully submitted,


Glenn E.J. Murphy
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201040-06681001

ABSTRACT

An object is fixed to a surface by means of two flat structures, which are coated on one side with a pressure-sensitive adhesive, and which on the other side have corresponding connecting elements to connect the two flat structures in a form-fitting manner. The two flat structures connect end-to-end to form one flat structure with pressure-sensitive adhesive on one side and connecting elements on the other. When the one flat structure is folded, the connecting elements face each other and interconnect with a form fit. Part of the side coated with pressure-sensitive adhesive is bonded to the object, and another part of the side coated with pressure-sensitive adhesive is bonded to the surface, either before or after the one flat structure is folded. The object can be detached from the surface with little force without leaving a residue or causing damage.

10/018990

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PATENT
Docket H 3947 PCT/US

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Re: PCT/EP00/05536

International Filing Date: June 16, 2000
Priority Date: June 24, 1999
Applicant: LEPSIUS, et al.
Title: METHOD AND FLAT STRUCTURE
FOR DETACHABLY FIXING AN
OBJECT TO A SURFACE

PRELIMINARY AMENDMENT

Assistant Commissioner of Patents
Washington, DC 20231

Please enter the amendments below before examining this
case on the merits:

IN THE SPECIFICATION:

On page 1, insert below the title:

--CROSS-REFERENCE TO RELATED APPLICATIONS

This application is a U.S. National Stage application
filed under 35 U.S.C. § 371 of International Application No.
PCT/EP00/05536, filed June 16, 2000, in the European Patent
Office, claiming priority under 35 U.S.C. §§ 119 and 365 of
PCT/EP00/05536 and DE 199 28 921.2, filed on June 24, 1999,
in the German Patent Office.--

201040-0669T001

On page 3, line 23, delete "Problem addressed by the
invention and solution" and insert the heading --DESCRIPTION
OF THE INVENTION--.

IN THE CLAIMS:

Please cancel claims 2-9 without prejudice.

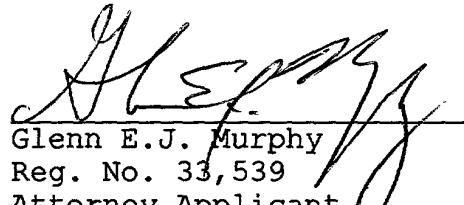
ABSTRACT:

Please add the attached abstract to the
application as a separate page following the claims.

REMARKS

Applicants respectfully request entry of this Amendment
and examination of the application. If any fees are due to
enter this paper that have not been accounted for, please
charge Deposit Account No. 01-1250.

Respectfully submitted,


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Henkel Corporation
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2500 Renaissance Blvd., Suite 200
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ABSTRACT

An object (5) is fixed by means of two flat structures, which are coated on one side with a pressure-sensitive adhesive (4). On the other side (1,2), said flat structures have corresponding connecting elements (10, 11,12,13) for connecting these sides in a form-fitting manner. The two flat structures are interconnected at their ends to form just one flat structure (3). This flat structure (3) is coated with the pressure-sensitive adhesive (4) on one side and has the connecting elements (10, 11, 12, 13) on the other. The connecting elements (10, 11, 12, 13), which lie on top of each other when the flat structure (3) is folded, correspond with each other so that the superposed areas (1,2) are interconnected with a form fit. Part of the side of the flat structure (3) that is coated with the pressure-sensitive adhesive (4) is bonded to the object (5) and another part of the side of the flat structure (3) is bonded to the surface and the flat structure (3) is folded before or after as described. The object can be detached with little force without leaving a residue or causing damage.

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PCT/EP00/05536

Method and Flat Structure for Detachably Fixing an Object to a Surface

This invention relates to a method for detachably fixing an object to a surface in which the object is fixed by means of two flat materials coated on one side with a pressure-sensitive adhesive, the flat materials being provided on their other sides with corresponding connecting elements for interlocking these other sides with one another and being made in particular in the form of tapes. In general, the surface mentioned is a vertical wall although it may also be a horizontal or sloping surface, such as a ceiling or an inclined wall.

10 Prior Art

A corresponding system of tapes for practising this method is known by the name of "tesa Klettband selbstklebend" (Beiersdorf AG). The fixing system consists on the one hand of a so-called hook tape which is provided on one side with a pressure-sensitive adhesive and on its other side with a plurality of hooks of the type normally used for velcro fasteners. The other tape of this fixing system is again coated on one side with a pressure-sensitive adhesive, but on its other side carries a nonwoven in which the hooks of the other tape are able to engage. In the known fixing method, the hook tape and the fleece tape are placed with their velcro fastening sides on top of one another and pressed together. Following the removal of a protective paper from the adhesive side of the fleece tape, the adhesive side of the fleece tape is applied to the object to be fixed and pressed firmly thereon. After the protective paper on the adhesive side of the hook tape has been peeled off, the hook tape is applied to the cleaned surface and pressed firmly thereon. In this way, the object on the one hand is fixed to the surface, but on the other hand can easily be removed

therefrom by separating the two tapes from one another.

Unfortunately, the disadvantage of this known fixing system and method is that, after the object fixed to the surface has been removed therefrom, the hook tape adheres to the surface which is not only
5 unattractive, but also impractical because this part of the surface can no longer be used for other purposes. If the hook tape is also to be removed from the surface, a small part of one end of the hook tape first has to be detached so that the hand of the user is able to grip the hook tape in order then to peel it off the surface.

10 Accordingly, in order to find a contact point for the hand for the purpose of detaching the hook tape from the surface, tools such as knives, screwdrivers etc. are frequently used to save the finger nails of the user. However, where standard tools such as these are used, the surface is often damaged, for example by scratching. In addition, it is almost impossible to
15 avoid residues of adhesive remaining behind on the surface and having to be laboriously removed.

In addition, adhesive strips and corresponding fixing methods are known under the names of "tesa Power Strips" and "tesa Poster Strips" and are available from Beiersdorf AG. The only significant differences between
20 these two products lie in the thickness of the pressure-sensitive adhesive and in their geometric shape. The ca. 2 to 3 cm long and 2 cm wide strips consist essentially of a highly elastic pressure-sensitive adhesive. One end is covered on both sides with a protective film. Finally, the entire surface area of both sides is covered in known manner with another protective
25 paper.

To use these strips, one strip is detached from its protective paper and applied to the back of the object to be fixed. The protective films on both sides of one end of the strip should not be removed. After removal of the protective paper from the other side of the strip, the back of the object
30 is applied to the surface and pressed thereon.

To detach the object from the surface, the fingers of the user grip the end of the strip covered by the protective film and pull in the direction of the longitudinal axis of the strip. By virtue of the high elasticity of the adhesive material, it increases in length and decreases in width, the pressure-sensitive adhesive separating from the wall. Another important aspect of this process is that the strips are always pulled parallel to the surface. If the strip is pulled obliquely, it is in danger of tearing.

Although the fixed object can be completely removed from the wall without destruction using this fixing system and fixing method, force does have to be applied. In addition, once the object has been applied to the surface, it is not easy to reposition. Repositioning is often desirable for aligning pictures, posters etc. on a wall.

In addition, a tape coated on one side is available under the name of "Duotec" from Binder. On its other side, the tape has mushroom-shaped projections which extend vertically outwards from the surface of the tape. These projections are spaced at such intervals apart from one another and have such a geometry that, when two pieces of the tape are placed with their adhesive sides on top of one another, the mushroom-like projections interengage on the lines of a velcro fastener. The particular feature of this tape is that the corresponding connecting elements in this case do not differ in shape.

Problem addressed by the invention and solution

Accordingly, the problem addressed by the present invention was to provide a method of the type mentioned at the beginning for detachably fixing an object to a surface which would enable both the object and the flat material to be completely and nondestructively removed without significant application of force. In addition, the fixed object would be able to be repositioned on the surface simply, quickly and conveniently.

According to the invention, the solution to this problem in the method

mentioned at the beginning is characterized in that both flat materials are joined together at their ends to form only one flat material and, in particular, are in one piece, in that the flat material is coated on one side with the pressure-sensitive adhesive and, on its other side, comprises the connecting elements, the connecting elements which lie on top of one another when the flat material is folded corresponding with one another to interlock the sides lying on top of one another, and in that part of the side of the flat material coated with pressure-sensitive adhesive is stuck to the object and another part of that side of the flat material is stuck to the surface and the flat material is folded in the manner mentioned either before or afterwards.

Although the flat material may assume any shape, it is preferably in the form of a tape.

According to the invention, the flat material may be prefolded by the manufacturer so that the user need only apply the outer sides coated with pressure-sensitive adhesive on the one hand to the object and on the other hand to the surface. The order of application is not important. Normally, however, the flat material is first applied to the back of the object and then to the surface. However, the reverse order is also possible in accordance with the invention.

In the interests of simplicity, the following description refers to a tape although the invention is by no means confined to this particular geometric form.

The method according to the invention affords a considerable advantage over the prior art discussed in the foregoing.

Firstly, an object can be detachably fixed to a wall.

Secondly, complete and nondestructive detachment without significant application of force is possible as follows: the object is unfolded from the wall by separating the corresponding connecting elements from one another (the angle of the folded tape is 0° , the angle of the fully

unfolded tape 180°). By then pulling in a direction perpendicular to the surface or at an angle of $< 90^\circ$, that part of the tape adhering to the surface can be completely peeled off the wall. Since the force for detaching the tape is directed at least partly perpendicularly away from the surface, the pressure-sensitive adhesive adhering to the tape is completely removed from the surface.

Another advantage over the "tesa Poster Strips" and "tesa Power Strips" is that the areas provided with a non-removable protective film, the so-called "leaders", in those strips are no longer necessary. In the known adhesive tapes, these leaders must project beyond the object to be fixed so that they can be gripped by the hand of the user. This results in an unattractive appearance. In addition, if alternatively a foldable object, for example a two-piece towel hook, is to be fixed with the known adhesive tapes, disadvantages arise. Although, in this case, the leader can be completely covered by the object because, to detach the object, the fixed object can be folded away from the wall to expose the "leader" so that the leader does not necessarily have to project beyond the fixed object (instead of unfolding the object, a two-piece object comprising a rail may also be pushed apart), a large part of the adhesive area is lost to the leader provided with the protective film. These disadvantages are not present in the method according to the invention or in the flat material according to the invention as discussed further below.

Another disadvantage which does not arise in the method according to the invention lies in the problems involved in the handling of the above-mentioned adhesive strips provided with a leader. In many cases, the user is not aware that he/she is not supposed to remove the protective film of the leader. Since the user is accustomed to removing protective films from adhesive strips, it happens fairly often that he/she also removes the protective film from the leader so that the actual advantage of the leader, namely its function as a handling aid during removal, is lost.

Thirdly, the method according to the invention enables the object already stuck to the surface to be repositioned. To this end, the object is unfolded from the wall through a small angle, the corresponding connecting elements separating from one another, repositioned and finally pressed
5 back onto the surface, the connecting elements mentioned re-engaging in one another and fixing the object to the wall in the chosen position.

In the method according to the invention, the corresponding connecting elements mentioned may have different shapes. Thus, in one embodiment, the corresponding connecting elements consist of hooks and
10 loops of a velcro fastener.

Alternatively, however, the corresponding connecting elements may also consist of mushroom-shaped pins - of the type already mentioned in the acknowledgement of the prior art - and loops. For fastening, the thickened ends of the mushroom-shaped pins engage in the loops.

15 In another embodiment, however, the two corresponding connecting elements are of the same shape and more particularly consist of mushroom-shaped pins. In this case, the connection is established in the same way as with the known Binder "Duotec" tape. Tapes consisting of material shaped into parallel waves "phase-shifted" through 180° may also
20 be used. A connection is established by pressing the wave peaks exactly into the wave troughs. Looking from above perpendicularly to the wave direction onto the wave peaks or troughs, there are webs which may be angled in relation to the plane of the tape and which thus prevent accidental separation of the joined parts of the tape.

25 If two different types of connecting elements are provided, as in another embodiment of the invention, the other side of the tape carrying the two different types of connecting elements is transversely divided in two and, more particularly, is divided into two equal halves, one half comprising connecting elements of one type and the other half comprising connecting
30 elements of the other corresponding type. An optimal connection between

the tape halves is established both when the two halves lie exactly on top of one another after folding together and when the two halves have to be placed obliquely on top of one another for positioning the object to be fixed.

In another embodiment of the invention, however, the two different types of connecting elements are applied to the above-mentioned side of the tape in a certain pattern. This pattern may be a strip or grid pattern. In this case, a good connection between the two parts of the tape is only established when the corresponding connecting elements lie on top of one another. However, if the two halves of the tape are folded together in such a way that identical connecting elements lie on top of one another, the object is not fixed. Such a possibility could be of advantage in certain cases.

The various connecting elements may also be statistically distributed. Another embodiment of the invention is characterized in that, instead of the connecting elements to be fitted together, pressure-sensitive adhesive is used at least on parts of the inside of the tape, the adhesion of the inner parts of the tape to one another not exceeding 50% of the adhesion of the outer pressure-sensitive adhesive to the substrates (object and wall).

The present invention also relates to a flat material, more particularly an adhesive tape, for detachably fixing an object to a surface, one side of the flat material being coated with a pressure-sensitive adhesive and the other side comprising connecting elements of at least one type capable of interlocking with connecting elements of another corresponding type. One such adhesive tape is marketed under the name of "tesa Klettband selbstklebend" by Beiersdorf AG.

To solve the problem stated above, it is proposed in accordance with the invention that the other side of the above-mentioned flat material comprise both corresponding types of connecting elements. These types of connecting elements may be, for example, hooks and loops of a velcro

fastener known per se.

Again in the interests of simplicity, the following description refers to a tape or adhesive tape and not to the flat material although the invention is not confined to this particular geometric form.

5 Here, too, the corresponding connecting elements may assume different forms. In one embodiment, the corresponding connecting elements consist of the hooks and loops of a velcro fastener. In another advantageous embodiment, the corresponding connecting elements consist of mushroom-shaped pins and loops, as mentioned in the
10 foregoing.

The distribution of the two different types of connecting elements on the other side of the tape may differ according to requirements. In a preferred embodiment, however, the other side of the tape is transversely divided in two and, in particular, is divided into two equal halves, one half
15 comprising connecting elements of one type and the other half comprising connecting elements of the other corresponding type. The advantages of such an arrangement were mentioned above.

In addition, in the method according to the invention and the flat material according to the invention, the flat material may have an elastic support. In this case, the tape can be removed by pulling at an angle to the
20 wall of $>90^\circ$. In another possible embodiment, the "leaders" known from the prior art relating to these adhesive strips may be provided as long as the associated disadvantages are taken into consideration. In this case, the adhesive tape can be removed by pulling parallel to the wall.

25

Suitable pressure-sensitive adhesives

There is no restriction on the use of the various known types of pressure-sensitive adhesives. Pressure-sensitive adhesives (PSAs for short) are adhesives which, in solventless form, are permanently tacky at
30 20°C and remain capable of adhesion, are largely non-substrate-specific

and adhere immediately to almost all substrates under light pressure.

Pressure-sensitive adhesives are used almost exclusively for coating supports, for example paper or films in tape form, adhesive labels or self-adhesive decorative films. To this end, the actual adhesives are applied to the supports in the form of solutions, dispersions or even melts. Low-viscosity solventless reactive systems (polyurethane systems) are also used for this purpose. After the adhesive has set, the layer of pressure-sensitive adhesive is present as a thin film on the support and is covered pending use with suitable antiadhesively finished materials, for example silicone paper or siliconized polyethylene film. In some cases the pressure-sensitive adhesive is also applied to the cover material and the adhesive film formed is transferred to the actual support by reverse coating. The dry coating weight varies between 4 and 40 g/m² according to the particular application and the roughness of the support.

Suitable raw materials for pressure-sensitive adhesives are natural and synthetic rubbers in conjunction with modified natural resins, phenol-formaldehyde resins or hydrocarbon resins. Besides rubber, polyacrylates, polymethacrylates, polyvinyl ethers and polyisobutenes are also commonly used, again usually in combination with resins. Silicone resin pressure-sensitive adhesives are also known for special applications.

Pressure-sensitive dispersion adhesives are mainly based on polyacrylate dispersions and, in some cases, also on special vinyl acetate copolymers, resins again generally being added. Besides suitable resins, two polymer bases, ethylene/vinyl acetate copolymers and styrene/butadiene or styrene/isoprene block copolymers, which are also known as thermoplastic rubbers, are mainly used for pressure-sensitive hotmelt adhesives.

In general, a pressure-sensitive adhesive is made up of a high-polymer base resin which determines cohesion and specific adhesion and tackifying resins (so-called tackifiers), the tackifying resin also being

replaceable in some systems by low molecular weight fractions of the base polymer. To increase cohesion, the base resin in some systems is crosslinked after application or vulcanized in the case of rubber-based pressure-sensitive adhesives.

5

Examples of embodiment

Examples of embodiment of the invention are described in detail in the following with reference to the accompanying drawings, wherein:

Figure 1 is a front elevation of an adhesive tape according to the invention in the direction of the other side carrying the connecting elements.

Figure 2 is a side elevation of an object fixed to a wall with the adhesive tape according to the invention as shown in Fig. 1.

Figure 3 is an elevation corresponding to Fig. 2 during detachment of the fixed object.

Figure 4 is a section through the adhesive tape according to the invention as shown in Figs. 1 to 3.

Figure 5 is a section corresponding to Fig. 4 through another embodiment of the adhesive tape according to the invention.

Figure 6 is a section corresponding to Figs. 4 and 5 through a third embodiment.

In all the drawings, the same reference numerals have the same meaning and, accordingly, may only be explained once.

The adhesive tape according to the invention shown in Fig. 1 is coated with a pressure-sensitive adhesive on the side which is not shown. The side shown has two regions 1,2, the region 1 carrying hooks and the region 2 carrying loops of a velcro fastener known per se.

To fix an object 5 to a surface 6 which, in the present case, is a vertical wall, the adhesive tape 3 is transversely folded together in the middle so that the two regions 1, 2 stick to one another under the effect of

the velcro-type fastening. One side of the folded adhesive tape 3 which is coated with a pressure-sensitive adhesive 4 - shown as a thin line in Fig. 2 - is then applied to the surface of an object 5 to be fixed. The object 5 may be any of a variety of objects, for example a hook, a clip, a board, a holder, etc. The side opposite the region 1, which is also coated with pressure-sensitive adhesive 4, is then pressed onto the surface 6. The object 5 is now firmly fixed to the wall 6. If its position needs to be altered slightly, it is sufficient to raise the object 5 in the direction of the arrow 7, to reposition it, to let it back down and to press it onto the surface 6 again.

For detachment, which is illustrated in Fig. 3, the procedure is as follows:

The object 5 is first raised in the direction of the arrow 7 in the same way as for repositioning, the connection between the regions 1 and 2 being broken. The object 5 now raised through an angle of $<90^\circ$ or - with elastic tapes - even $>90^\circ$ is pulled in the direction of the arrow 8, i.e. with a linear application of force 9. In this way, the region 1 of the adhesive tape, together with the adhesive adhering thereto, can be completely peeled off the wall 6 without significant effort.

Various connecting elements on the lines of a velcro fastener are shown in Figs. 4 to 6. In Fig. 4, the connection is established by hooks 10 and loops 11 and, in Fig. 5, by mushroom-shaped pins 12, the thickened parts 13 in the form of an ellipsoid engaging in the loops 11. Finally, Fig. 6 shows a connection where the corresponding connecting elements are of the same shape and both connecting elements comprise mushroom-shaped pins 12 with thickened parts 13 which engage in the empty spaces between the stalks of the mushrooms of the other region and are interlockingly held by their thickened parts 13. The corresponding connecting elements shown in Figs. 4 to 6 are suitable for use with the adhesive tape according to the invention although other similar connecting elements acting in the same way may also be used.

List of reference numerals:

- 1 region (hook)
- 2 region (loop)
- 3 adhesive tape
- 4 pressure-sensitive adhesive
- 5 object
- 6 surface (wall)
- 7 arrow
- 8 arrow
- 9 linear application of force
- 10 hooks
- 11 loops
- 12 mushroom-shaped pins
- 13 thickened parts

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CLAIMS

1. A method for detachably fixing an object (5) to a surface (6) in which the object (5) is fixed by means of two flat materials coated on one side with a pressure-sensitive adhesive (4), the flat materials being provided on their other sides (1,2) with corresponding connecting elements
5 (10,11,12,13) for interlocking these other sides with one another and being made in particular in the form of tapes, characterized in that both flat materials are joined together at their ends to form only one flat material (3) and, in particular, are in one piece, in that the flat material (3) is coated on one side with the pressure-sensitive adhesive (4) and, on its other side,
10 comprises the connecting elements (10,11,12,13), the connecting elements (10,11,12,13) which lie on top of one another when the flat material (3) is folded corresponding with one another to interlock the sides (1,2) lying on top of one another, and in that part of the side of the flat material (3) coated with pressure-sensitive adhesive (4) is stuck to the object (5) and another
15 part of that side of the flat material (3) is stuck to the surface and the flat material (3) is folded in the manner mentioned either before or afterwards.
2. A method as claimed in claim 1, characterized in that the corresponding connecting elements consist of hooks (10) and loops (11) of a velcro fastener.
- 20 3. A method as claimed in claim 1, characterized in that the corresponding connecting elements consist of mushroom-shaped pins (12) and loops (11).
4. A method as claimed in claim 1, characterized in that the two corresponding connecting elements are of the same shape and more
25 particularly consist of mushroom-shaped pins (12).
5. A method as claimed in any of claims 1 to 13, characterized in that the other side of the flat material, more particularly the tape, carrying the two different types of connecting elements is transversely divided in two and, more particularly, is divided into two equal halves, one half (1)

comprising connecting elements of one type and the other half (2) comprising connecting elements of the other corresponding type.

6. A flat material, more particularly an adhesive tape (3), for detachably fixing an object (5) to a surface (6), one side of the flat material (3) being
5 coated with a pressure-sensitive adhesive (4) and the other side comprising connecting elements of at least one type capable of interlocking with connecting elements of another corresponding type, characterized in that the other side (1,2) of the flat material comprises both corresponding types of connecting elements (10,11,12,13).
- 10 7. A flat material as claimed in claim 6, characterized in that the corresponding connecting elements consist of hooks (10) and loops (1) of a velcro fastener.
8. A flat material as claimed in claim 6, characterized in that the corresponding connecting elements consist of mushroom-shaped pins (12)
15 and loops (11).
9. A flat material as claimed in any of claims 6 to 8, characterized in that the other side of the flat material, more particularly the tape, is transversely divided in two and, more particularly, is divided into two equal halves, one half (1) comprising connecting elements of one type and the
20 other half (2) comprising connecting elements of the other corresponding type.

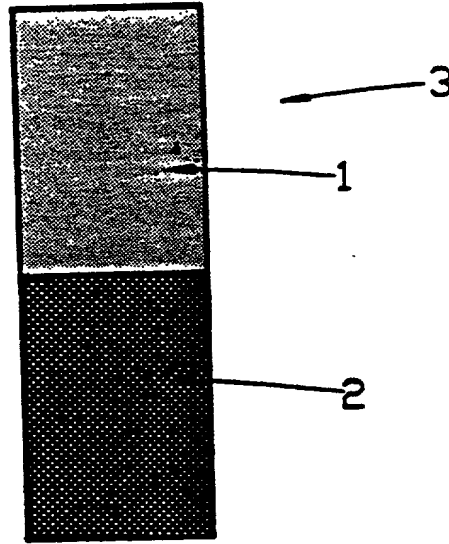


FIG. 1

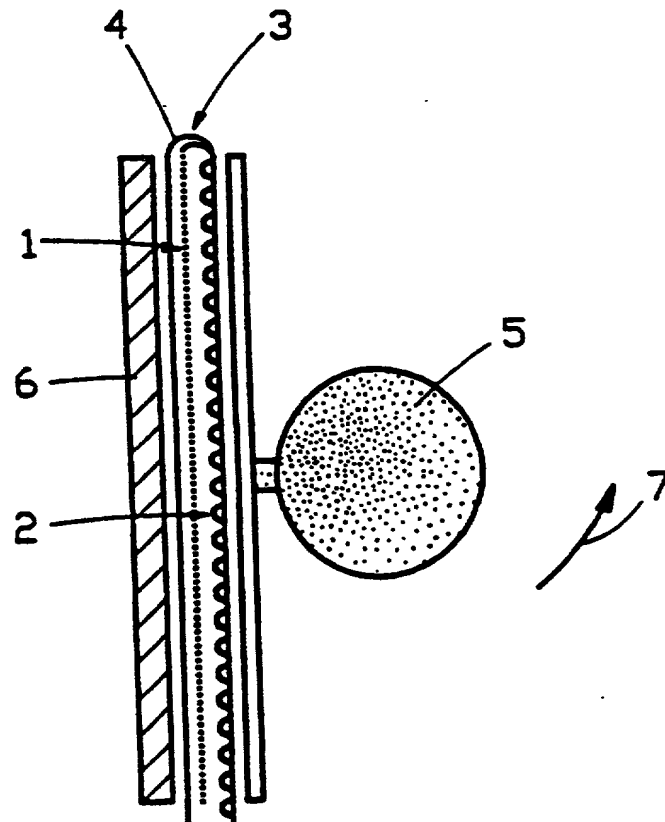


FIG. 2

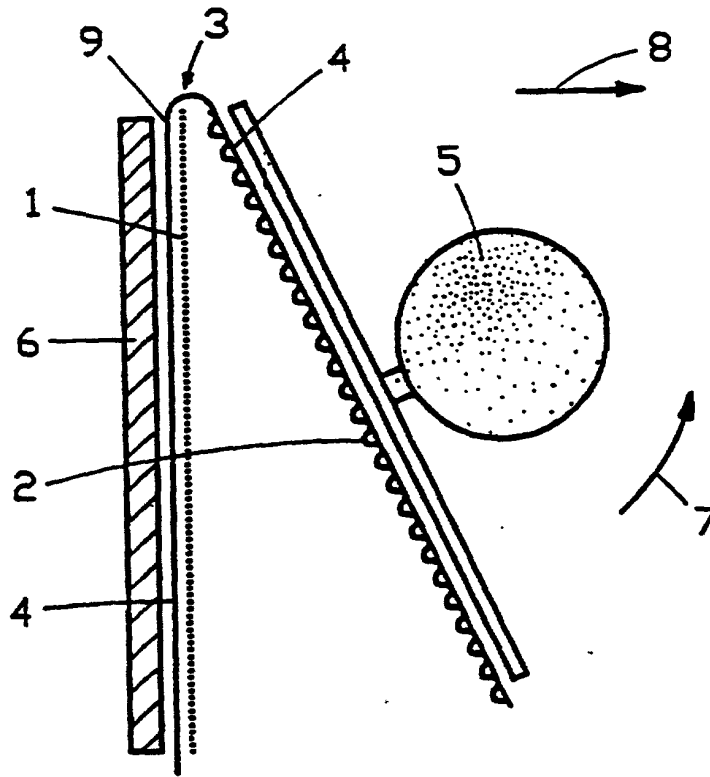


FIG. 3

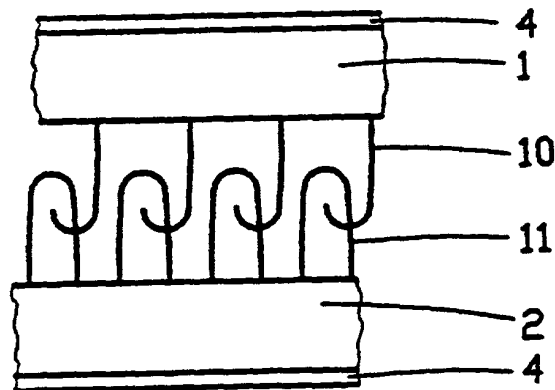


FIG. 4

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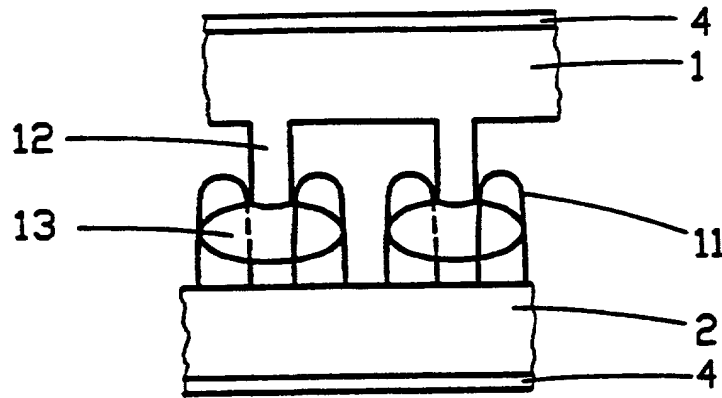


FIG. 5

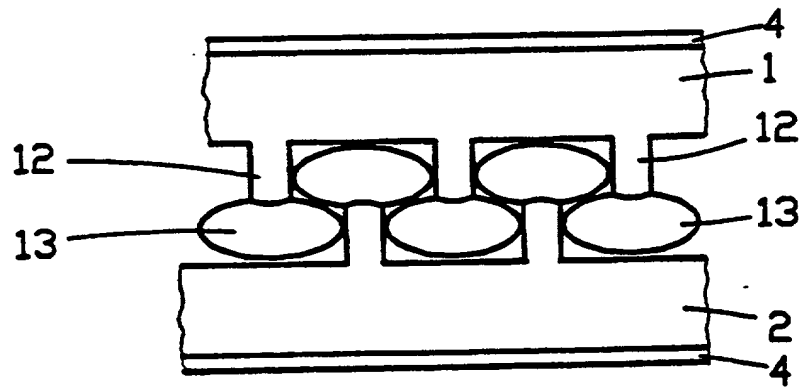


FIG. 6

"Express Mail" mailing label number

APR 01 2002

Date of Deposit

PTO/SB/01 (6-95)

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DECLARATION FOR UTILITY OR DESIGN PATENT APPLICATION

☐ Declaration Submitted with Initial Filing OR ☐ Declaration Submitted after Initial Filing

Attorney Docket
Number

H 3947 PCT/US

First Named
Inventor

LEPSIUS, Tilwin

COMPLETE IF KNOWN

Application Number

Filing Date

Group Art Unit

Examiner Name

As a below named inventor, I hereby declare that:

My residence, post office address, and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

METHOD AND FLAT STRUCTURE FOR DETACHABLY FIXING AN OBJECT TO A SURFACE

(Title of the Invention)

the specification of which

☐ is attached hereto

OR

☒ was filed on (MM/DD/YYYY) 6/16/2000 as United States Application Number or PCT International

Application Number PCT/EP00/05536 and was amended on (MM/DD/YYYY) (if applicable).

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment specifically referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37 Code of Federal Regulations, § 1.56.

I hereby claim foreign priority benefits under Title 35, United States Code § 119(a)-(d) or § 365(b) of any foreign application(s) for patent or inventor's certificate, or § 365(a) of any PCT International application which designated at least one country other than the United States of America, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or of any PCT International application having a filing date before that of the application on which priority is claimed.

Prior Foreign Application Number(s)	Country	Foreign Filing Date (MM/DD/YYYY)	Priority Not Claimed		Certified Copy Attached?	
			YES	NO	YES	NO
199 28 921.2	Germany	6/24/1999	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

☐ Additional foreign application numbers are listed on a supplemental priority sheet attached hereto:

I hereby claim the benefit under Title 35, United States Code § 119(e) of any United States provisional application(s) listed below.

Application Number(s)	Filing Date (MM/DD/YYYY)	Additional provisional application numbers are listed on a supplemental priority sheet attached hereto.

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DECLARATION

Page 2

I hereby claim the benefit under Title 35, United States Code §120 of any United States application(s), or §365© of any PCT international application designating the United States of America, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT international application in the manner provided by the first paragraph of Title 35, United States Code §112.1 acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations §1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application.

U.S. Parent Application Number	PCT Parent Number	Parent Filing Date (MM/DD/YYYY)	Parent Patent Number (if applicable)
	PCT/EP00/05536	6/16/2000	

☐ Additional U.S. or PCT international application numbers are listed on a supplemental priority sheet attached hereto.

As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith:

☐ Firm Name Customer Number or label
OR

☒ List Attorney(s) and/or agent(s) name and registration number below:

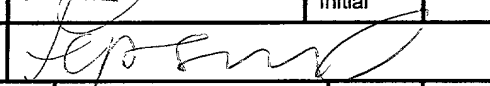
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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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Post Office Address	Bardelebenstr. 8						
Post Office Address							
City	40545 Duesseldorf	State		Zip		Country	Germany
						Applicant Authority	
<input checked="" type="checkbox"/> Additional inventors are being named on supplemental sheet(s) attached hereto							

(+) inside this box

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DECLARATION										ADDITIONAL INVENTOR(S) Supplemental Sheet													
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Inventor's Signature										Date													
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Name of Additional Joint Inventor, if any:										<input type="checkbox"/> A petition has been filed for this unsigned inventor													
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Inventor's Signature										Date													
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